

THE JOURNAL
OF
BIOCHEMISTRY

EDITED FOR
THE JAPANESE BIOCHEMICAL SOCIETY

QP
501
J67

VOLUME 67, 1970

EDITORIAL BOARD

OSAMU HAYASHI
TOSHIZO ISEMURA
YOSHITO KAZIRO
GORO KIKUCHI
JIRO KOYAMA
BUNJI MARUO

TAKASHI MURACHI
MAKOTO NAKAO
SHOSHICHI NOJIMA
YASUYUKI OGURA
REIJI OKAZAKI
RYO SATO
KAZUO SHIBATA

SAKARU SUZUKI
NOBUO TAMIYA
YUJI TONOMURA
NOBUO UI
IKUZO URITANI
TAMIO YAMAKAWA

PUBLISHED MONTHLY
BY
THE JAPANESE BIOCHEMICAL SOCIETY
The University of Tokyo, Tokyo

COPYRIGHT, 1970 ©

BY

THE JOURNAL OF BIOCHEMISTRY

PUBLISHED

BY

THE JAPANESE BIOCHEMICAL SOCIETY

CONTENTS OF VOLUME 67

No. 1, January, 1970

	PAGE
Sulfuric Acid Fluorescence of Various Steroid Hormones. TETSUO UETE, AKEMI SHIMOGAMI and MICHIKO WASA	1
Effect of Nature and Supply of Carbon Sources on Cellulase Formation in <i>Pseudomonas fluorescens</i> var. <i>cellulosa</i> . KUNIO YAMANE, HIROSHI SUZUKI, MASAO HIROTANI, HARUMI OZAWA and KAZUTOSI NISIZAWA	9
Purification and Properties of Extracellular and Cell-bound Cellulase Compounds of <i>Pseudomonas fluorescens</i> var. <i>cellulosa</i> . KUNIO YAMANE, HIROSHI SUZUKI and KAZUTOSI NISIZAWA	19
Heterogeneity of Alginase in Special Reference to the Enzymatic Degradation. SONOKO FUJIBAYASHI, HISAKO HABE and KAZUTOSI NISIZAWA.....	37
Distribution and Properties of Alkaline Pyrophosphatases of Rat Liver. MASACHIKA IRIE, ATSUKO YABUTA, KIMIKO KIMURA, YUKO SHINDO and KENKICHI.....	47
Hydrolysis of Nucleoside Di- and Tri-phosphates Alkaline Inorganic Pyrophosphatase of Rat Liver and Yeast. MASACHIKA IRIE, ATSUKO YABUTA, TAHEI NEGI and KENKICHI TOMITA.....	59
Studies on Thermophilic α -Amylase from <i>Bacillus stearothermophilus</i> . I. Some General and Physico-chemical Properties of Thermophilic α -Amylase. KYOKO OGASAHARA, AKIRA IMANISHI and TOSHIZO ISEMURA	65
Studies on Thermophilic α -Amylase from <i>Bacillus stearothermophilus</i> . II. Thermal Stability of Thermophilic α -Amylase. KYOKO OGASAHARA, AKIRA IMANISHI and TOSHIZO ISEMURA	77
Studies on Thermophilic α -Amylase from <i>Bacillus stearothermophilus</i> . III. Effect of Temperature on the Renaturation of Denatured Thermophilic α -Amylase. KYOKO OGASAHARA, KATSUHIDE YUTANI, AKIRA IMANISHI and TOSHIZO ISEMURA.....	83
Specificity of RNase U ₂ . TSUNEKO UCHIDA, TERUKATSU ARIMA and FUJO EGAMI	91
Studies on the Catalytic Activity of Poly- α -amino Acids. II. Hydrolysis of <i>p</i> -Nitrophenyl Acetate by an Interaction between Hydroxyl and Carboxyl Groups of Poly (L-Tyr-L-Glu), Copoly (L-Tyr, L-Glu, L-Ala) or Copoly (L-Tyr, L-Glu, L-Pro). HIROYUKI YAMAMOTO and JUNZO NOGUCHI	103
5-Hydroxykynurenine Decarboxylase in Rat Intestine. TOMOO NOGUCHI, HIROKI KASEDA, RYO KIDO and YUICHI MATSUMURA	113
<i>In vitro</i> Protein Synthesis Directed by R17 Viral Ribonucleic Acid. IV. Chemical Synthesis of Modified Aminoacyl-tRNA. SATOMI IGARASHI and WILLIAM PARANCHYCH	123
Effect of Peptidyl-tRNA on Polyuridylylate Directed Polypeptide Synthesis. SATOMI J. IGARASHI.....	133

Short Communications

Purification of DNA-dependent RNA Polymerase from <i>Escherichia coli</i> . MARIKO TADA and MITSUHIKO TADA	139
The Globoside of Bovine Adrenal Gland. JUN'ICHI KAWANAMI	143
A New Form of Native Tropomyosin. T. FUKAZAWA, E. BRISKEY and W.F.H.M. MOMMAERTS.....	147

Preliminary Notes

Effect of Adenosine 5'-Triphosphate and Nicotinamide Adenine Dinucleotide on Oxidative Phosphorylation of Aged Brain Mitochondria. KAZUE OZAWA, OSAMU KITAMURA, TADASHI OHSAWA, HIROSHI ARAKI, TAKESHI MURATA and ICHIO HONJO	149
---	-----

Kinetic Behavior of D-Amino Acid Oxidase in its Reaction with Basic Amino Acids. KUNIO YAGI, MORIMITSU NISHIKIMI, NOBUKO OHISHI and AKIKO TAKAI	153
--	-----

No. 2, February, 1970

Phosphorylation of Bound Adenosine Monophosphate in the Electron Transfer Particle. TAKAYUKI OZAWA	157
The Degradation of Ribosomal RNA in <i>E. coli</i> by Mitomycin C and AF-5, Preferential Inhibitors of DNA Synthesis. NOBUO KATO, KINJI OKABAYASHI and DEN'ICHI MIZUNO.....	175
The Active Site of Myosin A-Adenosine Triphosphatase. VIII. Modification of the Enzyme with Diazonium-1 H-Tetrazole. TAKAMICHI SHIMADA	185
Vitamin K ₃ -dependent NADPH Oxidase of Liver Microsomes. Purification, Properties, and Identity with Microsomal NADPH-cytochrome c Reductase. HIROKO NISHIBAYASHI-YAMASHITA and RYO SATO	199
Reaction of Glyoxal with α-Glucan Phosphorylases from Potato and Rabbit Muscle. TOSHIO FUKUI, ATSUMI KAMOGAWA and ZIRO NIKUNI	211
Control of Ergosterol Biosynthesis in Yeast. (Existence of Lipid Inhibitors). AKIHIKO KAWAGUCHI...	219
Studies on Denitrification. XII. Gas Production from Amines and Nitrite. TERUO MATSUBARA ...	229
Isolation and Characterization of Nucleoprotein, "Nuclear Fraction", from <i>Bacillus subtilis</i> . MASAO TAKEUCHI and AKIRA TSUGITA	237
A New Method for Simultaneous Purification of Cytochrome b ₅ and NADPH-cytochrome c Reduc- tase from Rat Liver Microsomes. TSUNEO OMURA, SACHIKO TAKESUE	249
Solubilization of NADH-cytochrome b ₅ Reductase from Liver Microsomes by Lysosomal Digestion. SACHIKO TAKESUE and TSUNEO OMURA	259
Purification and Properties of NADH-cytochrome b ₅ Reductase Solubilized by Lysosomes from Rat Liver Microsomes. SACHIKO TAKESUE and TSUNEO OMURA	267
The Kinetic Behavior of the FMN and protoheme Moieties of Yeast L(+)-Lactate Dehydrogenase (Cytochrome b ₂). HARUO SUZUKI and YASUYUKI OGURA	277
Effect of pH on the Parameters of Yeast L(+)-Lactate Dehydrogenase (Cytochrome b ₂). HARUO SUZUKI and YASUYUKI OGURA	291
Properties of an Oxidative Phosphorylation System Reconstituted from Coupling Factors in <i>Micro- coccus lysodeikticus</i> . SHINJI ISHIKAWA	297
Studies on the Structure of Bovine Kininogen: Cleavages of Disulfide Bonds and of Methionyl Bonds in Kininogen-II. HISAO KATO, SHIGEHARU NAGASAWA and TOMOJI SUZUKI	313

Short Communication

<i>In vitro</i> Interaction of Nitrogen-containing Heterocyclic Compounds with <i>Escherichia coli</i> Ribosomes: Dissociation of 70S Ribosome. FUMIO MIYAZAWA, KUNIE YOSHIKAWA and SHIGEO IWAHARA.....	325
--	-----

Preliminary Note

Three Factors for Amino Acid Polymerization from Silkworm Silkglands. SHIN-ICHIRO EJIRI, HIDEHARU TAIRA and KENSEI SHIMURA.....	329
--	-----

No. 3, March, 1970

	PAGE
Partial Purification and Properties of Urokinase Inhibitor from Human Placenta. TAKEHIKO KAWANO, KAZUO MORIMOTO and YAHIRO UEMURA.....	333
Immunochemical Studies on Fluoresceinthiocarbamyl and Reduced S-Carboxymethylated Cobrotoxin. CHUN-CHANG CHANG	343
A Mutant of <i>Bacillus subtilis</i> Appearing to Have a Temperature Sensitive Defect in the Ribosomes. OSAMU KANAMITSU, YOICHIRO KURODA, HIUGA SAITO and YONOSUKE IKEDA	353
A Study on the Interaction of Soybean Trypsin Inhibitor with Trypsin by Circular Dichroism. MITSUMASA ISHIDA, KOZO HAMAGUCHI and TOKUJI IKENAKA.....	363
Functional Sites of Transfer RNA for the Binding to Messenger RNA-Ribosome Complex. NOBU- YOSHI SHIMIZU, HIROSHI HAYASHI and KIN-ICHIRO MIURA.....	373
Accumulation of 2-Aminoimidazole by <i>Streptomyces eurocidicus</i> . YOSHIKI SEKI, TARO NAKAMURA and YOSHIRO OKAMI	389
States of Amino Acid Residues in Proteins. XXII. Effect of Cyanide on the Reactivities of Histidine and Tyrosine Residues in Ferrihemoglobin and Ferrimyoglobin. AKIKO TAKENAKA, OSAMU TAKENAKA, HIROO HORINISHI and KAZUO SHIBATA	397
Amino Acid Sequence of the Coat Protein of the RNA Phage ZR. TOHRU NISHIHARA, YUZO NOZU and YOSHIMI OKADA	403
Studies on Mold Protease. III. Some Physicochemical Properties and Amino Acid Composition of <i>Rhizopus chinensis</i> Acid Proteases. DAISUKE TSURU, ATSUSHI HATTORI, HIKOJI TSUJI and JUICHIRO FUKUMOTO	415
Reactions of 3,5,3',5'-Tetraiodothyroacetic Acid with Inorganic Pyrophosphate and Related Compounds. NOBUO SAKATO and KENKICHI TOMITA	421
Electron Microscopic Particle Length of F-Actin Polymerized <i>in Vitro</i> . MASARU KAWAMURA and KOSCAK MARUYAMA.....	437
Inhibition by Fusidic of Transferase II in Reticulocyte Protein Synthesis. NOBUO TANAKA, TOSHIO NISHIMURA and TADATOSHI KINOSHITA	459
Carboxymethylcellulose Chromatography in 6M Urea and Zone Electrophoresis of Calf Thymus Histone. YUTAKA KOBAYASHI and KOICHI IWAI	465
Fractionation of Calf Thymus Histone by a New Method of CM-cellulose Chromatography. TATSUO SENSHU and KOICHI IWAI	473
Studies on Cytochrome <i>b</i> -555 from Larvae of the Housefly, <i>Musca domestica</i> L. II. Isoelectric Point, Amino Acid Composition and Circular Dichroic Spectra. YOSHIE OKADA and KAZUO OKUNUKI... ..	487
Short Communication	
Substrate Specificity of the Nicking Enzymes Isolated from Phage T4-infected <i>Escherichia coli</i> . TADA- HIKO ANDO, JUN TAKAGI, TAEKO KOSAWA and YONOSUKE IKEDA.....	497
Preliminary Notes	
Differential Synthesis of Ribosomal Subunits during Development in the Cellular Slime Mold, <i>Dictyostelium discoideum</i> . YUZURU MIZUKAMI and MASAKI IWABUCHI.....	501
Redox State of Cytochrome <i>a</i> and Its Sensitivity to Proteinases. TAKASHI YAMAMOTO and KAZUO OKUNUKI	505

No. 4, April, 1970

	PAGE
Specific Repression of Chromatin-dependent RNA Synthesis by Silk Gland Histones. MICHITERU YOSHIDA and KENSUKE SHIMURA.....	507
On the Active Site of Myosin A-Adenosine Triphosphatase. IX. Chemical Modification of the Enzyme by Monoiodoacetamide. MASATO OHE, BYEONG-KUK SEON, KOITI TITANI and YUJI TONOMURA	513
Studies on Protamines. XIV. Partial Chemical Structure of One Component of Clupeine, Clupeine Z. MASAO AZEGAMI, SHIN-ICHI ISHII and TOSHI ANDO.....	523
Stimulation of Amino Acid Incorporation into Protein <i>in Vitro</i> by Various Nuclear RNA Fractions of the AH-130 Hepatoma Cells. TAKIKO AKINO and MINORU AMANO	533
The Structure and Function of Ribonuclease T ₁ . VIII. Reaction of 2-Hydroxy-5-nitrobenzyl Bromide with the Single Tryptophan Residue in Ribonuclease T ₁ . KENJI TAKAHASHI	541
Interaction of Antibiotics with Deoxyribonucleic Acid. I. Sensitivity of the Complexes to Nucleolytic Enzymes. MAKOTO KAGEYAMA, MAMORU HASEGAWA, AKIYO INAGAMI and FUJIO EGAMI ...	549
Ribosomal RNA Degradation and the Degradation Products in Starved <i>Escherichia coli</i> . IV. The Cellular Components Excreted into the Media during Different Deprivation Conditions. HIROMI MARUYAMA, MITSUKO ONO-ONITSUKA and DEN'ICHI MIZUNO	559
Control of the Synthesis of Phosphoenolpyruvate Carboxylase and Phosphoenolpyruvate Carboxykinase in <i>Escherichia coli</i> . HIROBUMI TERAOKA, TSUKASA NISHIKIDO, KATSURA IZUI and HIROHIKO KATSUKI	567
Studies on the Mechanism of Decrease in the Ribonucleic Acid Content in Liver Cells of Fasted Rats. I. Effect of Starvation on Ribonucleic Acid Degrading and Synthesizing Systems. TOSHIO ONISHI	577
The Function of Ubiquinone-10 Both in the Electron Transport System and in the Energy Conservation System of Chromatophores from <i>Rhodospirillum rubrum</i> . NOBORU YAMAMOTO, HIDEO HATAKEYAMA, KATSUZO NISHIKAWA and TAKEKAZU HORIO	587

Short Communications

Effect of Light on the Purple Complex of D-Amino-Acid Oxidase. KUNIO YAGI and NOBUKO OHISHI...	599
Circular Dichroic Studies on Protohemoproteins. I. Cytochrome b-563 from Larvae of the Housefly, <i>Musca domestica</i> L. YOSHIIE OKADA and KAZUO OKUNUKI	603

Preliminary Notes

Enzymatic Hydrolysis of Diol Waxes by Rat Liver Microsome. MASAMI GAMO and KUNIHIKO SAITO	607
Effect of Contraction on the Fragmentation of Myofibrils. KOEI TAKAHASHI, AKIHITO HATTORI and TSUTOMU YASUI	609

No. 5, May, 1970

Mechanism of Release of Maternal Messenger RNA Induced by Fertilization in Sea Urchin Eggs. YOSHITAKE MANO and HIROSHI NAGANO	611
A Simultaneous Estimation Method of DNA and RNA by the Orcinol Reaction and a Study on the Reaction Mechanism. YOICHI ENDO.....	629

CONTENTS OF VOLUME 67

v

	PAGE
Studies on Phosphate Hydrolyzing Activities in the Synaptic Membrane. TAKEO OHASHI, SHUJI UCHIDA, KAZUO NAGAI and HIROSHI YOSHIDA	635
Metabolism of 3 β -Stearyl-7 α -Hydroxycholesterol in Rats. MICHIO OGURA and KAZUMI YAMASAKI... 643	
Inhibition of Nucleic Acid Biosynthesis in Cell-free Systems of <i>Escherichia coli</i> B by Pluramycin. KAZUO NAGAI, NOBUO TANAKA and HAMAO UMEZAWA	655
Template Activity of Partially Dehistonized Nucleohistones for DNA Dependent RNA Polymerase. YOSHIKAZU KURASHINA, YOSHIKI OHBA and DEN'ICHI MIZUNO	661
Some Properties of Fragmented Frog Sarcoplasmic Reticulum with Particular Reference to Its Response to Caffeine. YASUO OGAWA	667
Hormonal and Dietary Control of Enzymes in the Rat. I. Roles of the Pancreas and Adrenals in Regulation of Liver Serine Dehydratase Activity. EIJI ISHIKAWA and KATSUYUKI NAKAJIMA..... 685	
Formation and Decomposition of a Phosphorylated Intermediate in the Reaction of Na ⁺ -K ⁺ Dependent ATPase. TOHRU KANAZAWA, MASAYUKI SAITO and YUJI TONOMURA	693
Purification and Properties of Bovine Serum Kallikrein Activated with Casein. MITSUO YANO, SHIGEHARU NAGASAWA and TOMOJI SUZUKI..... 713	

Short Communications

ATP Citrate Lyase Activity in the Liver of Newborn Lambs. MICHIKO MURAMATSU, KAICHI AMBO and TSUNEYUKI TSUDA	727
Reduction of Oxidized Glutathione by Xylitol. TOSHIO ASAKURA, KAZUHIKO ADACHI and HARUHISA YOSHIKAWA	731
Formation of Spore-specific DNA Photoproducts in UV-irradiated Bacterial Spore-spheroplasts but not in Ruptured Spheroplasts. HIROSHI TANOOKA and HIROSHI TERANO..... 735	

Preliminary Notes

A Redox Pigment Bound to Acylated Protein from Rat Liver Mitochondria. TAKAYUKI OZAWA, NAOKI YAMANAKA, MASAKO HAGIHARA and KUNIO YAGI	737
Presence of Apo-cytochrome <i>b</i> ₅ in Microsomes. Incorporation of Radioactive Heme to the Cytochrome <i>in vitro</i> . TOSHIHIKO HARA and SHIGEKI MINAKAMI	741
Presence of Apo-cytochrome <i>b</i> ₅ in Microsomes from Rat Liver. MASAHICO NEGISHI and TSUNEO OMURA	745
Kinetic Studies on the ES-complex Formation of <i>p</i> -Hydroxybenzoate Hydroxylase Using the Stopped-flow Method. NAOKI HIGASHI, HIROHUMI SHOUN, KEITARO HIROMI, KEIJI YANO and KEI ARIMA... 749	

No. 6, June, 1970

Chemical Determination of the Chlorine-containing Peptide, a Hepatotoxic Mycotoxin of <i>Penicillium islandicum</i> Sopp. ICHIJIRO ISHIKAWA, YOSHIO UENO and HIROSHI TSUNODA	753
Some Properties of the Polynucleotide Segments Isolated from Heat-denatured DNA by Digestion with a Nuclease Specific for Single Stranded DNA. KAZUO SHISHIDO and YONOSUKE IKEDA ... 759	
Structure of Phosphoprotein Metabolically Active in Phosphorylation and Dephosphorylation Reactions. YOSHITAKE MANO and KAZUTOMO IMAHORI	767

Hormonal and Dietary Control of Enzymes in the Rat. II. Effect of Pancreatectomy and Adrenalectomy on Some Liver Enzymes Unique to Amino Acid Metabolism and Gluconeogenesis. KATSUYUKI NAKAJIMA, HISAKO MATSUTAKA and EIJI ISHIKAWA	799
Reaction Mechanism of the Ca^{2+} -dependent ATPase of Sarcoplasmic Reticulum from Skeletal Muscle. III. Ca^{2+} -Uptake and ATP-Splitting. SINPEI YAMADA, TAIBO YAMAMOTO and YUJI TONOMURA... 789	789
pH-Dependent Conformation Change of a Bence Jones Protein. HIDEO TAKAHASHI, TOSHIO HIRAI, TAKACHIKA AZUMA, KOZO HAMAGUCHI and SHUNSUKE MIGITA	795
Hydrogen Ion Equilibria of a Bence Jones Protein. TAKACHIKA AZUMA, TOSHIO HIRAI, KOZO HAMAGUCHI and SHUNSUKE MIGITA	801
Studies on α_2 -Macroglobulin in Bovine Plasma. I. Purification, Physical Properties, and Chemical Compositions. SHIGEHARU NAGASAWA, HISAYOSHI SUGIHARA, BYUNG HOON HAN and TOMOJI SUZUKI	809
Studies on α_2 -Macroglobulin in Bovine Plasma. II. Interaction of α_2 -Macroglobulin and Trypsin. SHIGEHARU NAGASAWA, BYUNG HOON HAN, HISAYOSHI SUGIHARA and Tomoji SUZUKI.....	821
The Structure and Function of Ribonuclease T ₁ . IX. Photooxidation of Ribonuclease T ₁ in the Presence of Rose Bengal. KENJI TAKAHASHI.....	833
The Occurrence of Diesters of 2,3-Dihydroxyoctadecane in the Preen Gland of Green Pheasant (<i>Phasianus colchicus</i>). KUNIHIKO SAITO and MASAMI GAMO	841

Short Communications

Comparison of the Amino-acyl Termini of the Transfer RNA's from the Silkgland and Midgut of the Silkworm. KEIKO MATSUZAKI.....	851
Induction of Fatty Liver by Dietary Carbamylaspartic Acid. HISASHI MIYAZAKI, TADAHICO KARASAWA, YASUO MINAKI and YOSHIO YOSHIMURA	857

Preliminary Notes

Difference in Molecular Sizes of δ -Aminolevulinate Synthetases in the Soluble and Mitochondrial Fractions of Rat Liver. NORIO HAYASHI, BINKOH YODA and GORO KIKUCHI.....	859
Mechanism of Inhibition by Hemin of Increase of δ -Aminolevulinate Synthetase in Liver Mitochondria. YASUO KURASHIMA, NORIO HAYASHI and GORO KIKUCHI	863
Chemical Modification of Tyrosyl Residues of the Neutral Protease Obtained from <i>Bacillus subtilis</i> var. <i>amylosacchariticus</i> . DAISUKE TSURU, TOMOCHIKA YOSHIDA and JUICHIRO FUKUMOTO	867
Nuclear Estradiol Receptor in Rat Anterior Hypophysis. JUNZO KATO, YACHIYO ATSUMI and MASAMI MURAMATSU	871